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Remembrance of Things Past

The Enduring Value of Nuclear Weapons

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So long as there is a finite chance of war, we have to be interested in outcomes; and although all outcomes would be bad, some would be very much worse than others.

—Bernard Brodie

MUCH HAS been written about nuclear weapons, but what has been learned? Once an essential element of American foreign and defense policy, these matters were neglected after the Cold War and all but forgotten after September 11th. As the Schlesinger Commission concluded, "Because nuclear weapons have been less prominent since the end of the Cold War and have not been used since World War II, their importance and unique role as a deterrent have been obscured though not diminished."¹ Recent incidents of mismanagement of the US nuclear weapons enterprise, the acquisition of atomic weapons by North Korea, Iran's apparent quest for such weapons, the expiration of the Strategic Arms Reduction Treaty (START) and negotiation of its replacement with Russia, and the decision to engage in a nuclear posture review have brought the attention of policy makers

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to the important question of the role that nuclear forces should play in American strategy.

This is not a new question, but it requires a renewed evaluation. Bernard Brodie pondered it long ago, and his work birthed a rich literature that informed and clarified the round of nuclear debates that resulted in America's first comprehensive nuclear policy—massive retaliation.² Today, however, policy makers seem befuddled by nuclear weapons. After 60 years of living with The Bomb, they seem to have forgotten its value. Nuclear weapons produce strategic effects. Their presence compels statesmen to behave cautiously in the face of grave danger. This cautiousness produces restraint, which shores up international stability. In short, nuclear weapons deter.

In this article we first address the concept of deterrence, its requirements, and alternative strategies. We then discuss the effects of nuclear deterrence in international political relations and the capabilities—both nuclear and conventional—required to produce these effects. Finally, we draw conclusions with regard to the appropriate size and composition of the US strategic nuclear arsenal, given our arguments.

What is Deterrence?

From a theoretical standpoint, deterrence links a demand that an adversary refrain from undertaking a particular action to a threat to use force if it does not comply. Deterrence places the adversary in a situation in which it has a choice of complying with what has been demanded of it—inaction—or defying those demands and risking implementation of the deterrer's threatened sanction. What the adversary considers to generate expectations about the consequences of its alternatives has been the subject of wide and varied speculation.³ These expectations are distilled into expected-value calculations whereby the costs and benefits of an outcome are discounted by the probability of its occurrence (i.e., $[\text{benefits} - \text{costs}] * \text{probability}$). Then the expected values of possible outcomes stemming from a single course of action are summed. In deterrence the adversary compares the expected value of complying with the deterrer's demand and refraining from action to defying that demand and acting anyway. For deterrence to be successful, the deterrer's threatened sanction must reduce the expected value of defiance so that it is less than the expected value of compliance. The deterrer can do that by threatening to reduce the benefits of defiance or increase its costs. The former would constitute a denial threat, while the latter would

be a threat of punishment. And because the adversary will discount these threats by its assessment of the likelihood that the deterrer will implement them, the deterrer must convey these threats credibly.⁴

Deterrence is more than a theory. It is also a policy. States adopt deterrence policies for one reason—to fend off attack. The United States used deterrence to frame its approach to an apparently hostile Soviet Union and to make use of nuclear weapons by not using them. As the Schlesinger Commission put it, “Though our consistent goal has been to avoid actual weapons use, the nuclear deterrent is ‘used’ every day by assuring friends and allies, dissuading opponents from seeking peer capabilities to the United States, deterring attacks on the United States and its allies from potential adversaries, and providing the potential to defeat adversaries if deterrence fails.”⁵ Strategic nuclear weapons were used to operationalize strategies of denial and punishment. Denial strategies, generally termed *counterforce*, focused upon mitigating the ability of the adversary to use its military forces, especially nuclear forces, in the event of a conflict so as to reduce its chances of victory. Punishment strategies, generally termed *countervalue*, focused upon destroying the industrial capacity and urban centers of the adversary to impose terrible costs upon its society.⁶ During the Cold War, US defense programs were designed and justified in terms of their ability to fulfill these missions.⁷ Since 9/11, capabilities have been programmed in an astrategic manner, and many of the mundane considerations of deterrence have been cast aside, making the forging of a new deterrence policy problematic today.⁸

Deterrence theory and policy is based upon the presumption that the adversary to be deterred is rational. The *Deterrence Operations Joint Operating Concept*, which guides US deterrence doctrine and strategy, assumes that “[a]ctions to be deterred result from deliberate and intentional adversary decisions to act (i.e., not from automatic responses or unintended/accidental events). Decisions to act are based on actors’ calculations regarding alternative courses of action and actors’ perceptions of the values and probabilities of alternative outcomes associated with those courses of action.”⁹ It is often argued that deterrence is inherently flawed because no human being is perfectly rational—indeed, they often act irrationally.¹⁰ But this is a red herring. As Robert Jervis has argued, “How rational do men have to be for deterrence theory to apply? Much less than total rationality is needed for the main lines of the theory to be valid.”¹¹ Indeed, given that adversaries of any note lead large organizations—states—and

had to pursue strategies to gain and retain power, it is difficult to argue that such persons are irrational or nonrational.¹² They may not be perfect, but they are sensible and react to the incentives of their strategic and domestic environments.¹³ This holds also for terrorist groups such as al-Qaeda or Hamas, who utilize suicide terrorism to achieve strategic objectives.¹⁴ It is on this basis that strategy and policy can be readily erected.

Political Effects of Nuclear Weapons

A key goal of any national security policy should be to enhance stability, where stability is defined as the absence of war or major crisis. Assuming the absence of a sudden change in the anarchic nature of the international system, any such policy should rely upon deterring potential aggressors at its base. Nuclear weapons enhance “general deterrence,” a concept defined by Patrick Morgan. “*General deterrence* relates to opponents who maintain armed forces to regulate their relationship even though neither is anywhere near mounting an attack” (emphasis in original).¹⁵ The goal of a general deterrent policy would be to ensure that incentives for aggression never outweigh the disincentives.

In theory, nuclear weapons are better than conventional forces in terms of enhancing general deterrence. This is so because deterrence succeeds when the costs—or, more appropriately, the risks of costs—exceed any probable gains that are to be had through armed aggression. War has been such a common international phenomenon throughout the centuries because some decision makers have concluded that the benefits of aggression would outweigh its costs.¹⁶ Such a conclusion can be reached all the more easily when it is believed that victory on the battlefield can be attained quickly and decisively, and there are many historical examples from which decision makers can choose in order to bolster their confidence—from Bismarck’s wars against Denmark, the Austrian Empire, and France to Iraq’s conquest of Kuwait and its eviction by UN coalition forces.

Injecting the possible use of nuclear weapons by the defending state into the equation, however, can alter these calculations considerably. The possession of a sizable nuclear arsenal by a defender, as well as the means to deliver these weapons to the battlefield or the aggressor’s homeland, makes the risks of aggression much greater and the potential costs much starker. This is because the possession of nuclear weapons tends to equalize the power of states, although not to the absolute degree that some would argue—attributes of national power such as geographic size, population,

industrial capacity, GNP, and others still weigh heavily in any assessment of national power. Nonetheless, this equalizing tendency objectively manifests itself in two ways. On the battlefield, nuclear weapons can enhance the power of a smaller conventional force considerably. And in terms of absolute destructive power, only a finite amount of damage is necessary to destroy a modern state as a functioning entity.¹⁷ Provided that two states are capable of developing the means to reliably deliver at least “enough” nuclear weapons to their adversary’s homeland to “assure” its destruction, then, in a relative way, the two states can be considered equally powerful.

One could argue that the qualitative differences between nuclear and conventional forces also have certain psychological consequences that make the former a better buttress for general deterrence.¹⁸ Given the destruction that nuclear weapons could wreak in a short temporal period, the potential costs of aggression against a nuclear-armed adversary would be “paid up front,” as opposed to over a long period of mutual attrition, and are thus “clearer” to decision makers. And although some conventional munitions can approach the destructiveness of nuclear devices,¹⁹ a certain symbolism has come to be attached to nuclear weapons that has historically enhanced their clarifying quality and induced caution in national decision makers.²⁰ This clarifying effect operates particularly to the advantage of states defending their vital interests. The threat of a nuclear-armed state to use its nuclear weapons in defense of vital interests, such as its survival or territorial integrity, is almost inherently credible.²¹ Thus a secure nuclear arsenal has the effect of “sanctuarizing” the states that possess them. One could argue that nuclear weapons enhance general deterrence by virtually precluding acts of aggression against states that possess them,²² and thereby greatly enhance stability.

But how large an arsenal is necessary for a state to effectively “sanctuarize” itself? While much of the more recent literature on the value of nuclear weapons as a pacifying force in international relations has implicitly assumed that any number of survivable weapons would be adequate for successful deterrence,²³ in effect arguing for existential deterrence,²⁴ the concept of proportional deterrence²⁵ would be a better theoretical guide.

Under a doctrine utilizing proportional deterrence, the defender would need to possess, at a minimum, enough survivable nuclear forces²⁶ to inflict damage on the aggressor roughly equivalent to the gains—in territory, industrial capacity, et cetera—that the aggressor could hope to achieve if it successfully conquered the defender.²⁷ This, of course, assumes a strategy of

deterrence through punishment—that is, striking at the aggressor's population/industrial centers. Thus, for example, supposing the French, whose strategic doctrine rests upon proportional deterrence, desired to deter an attack by the Soviet Union during the Cold War, they would need enough survivable nuclear forces to inflict damage that was “the equivalent of France”—about 50 million people or striking, if not destroying, 100 to 150 major Soviet cities.²⁸ Hence, the answer to the question how much is enough for proportional deterrence? rests upon the rough value of the defender's territory, in a geopolitical sense.²⁹

China understands this. Adopting a minimum deterrent strategy, China's nuclear numbers remain relatively small compared to the large numbers held by the United States and Russia. It is estimated that China has approximately 400 nuclear weapons, with about 200 operationally deployed. It probably possesses 30 intercontinental ballistic missiles (ICBM) capable of striking the continental United States and about 10 that are capable of striking Hawaii and Alaska. It also possesses about 100 intermediate-range weapons capable of striking US bases, friends, and allies in the Pacific region.³⁰ These weapons would be enough to destroy more than the value of Taiwan to the United States, the most likely stakes in any conflict between the two countries. In contrast, the United States possesses 450 ICBMs, each capable of carrying up to three warheads; 18 Trident submarines, each equipped with 24 submarine-launched ballistic missiles (SLBM) that carry as many as eight warheads each; and 100 or so nuclear bombers capable of carrying a variety of payloads to include air-launched cruise missiles (ALCM). It is assumed that Russia has a similar mix. Yet, despite these rather large nuclear inequities, China continues to modernize its conventional capabilities, extending its influence throughout the region. How does one explain this behavior?

China is confident that its small nuclear arsenal is sufficient to deter rivals. In international politics, deterrence restrains states from acting externally but affords opportunities to act internally—allowing them to pursue whatever weapons they choose. Shrewd states recognize this as well as the fact that large nuclear arsenals buy them little; as in other areas of competition, there comes a point of diminishing return, and with nuclear weapons that point comes quickly. There is little the United States or Russia can do militarily to dissuade China from pursuing its armament program. China realizes this, which explains why its nuclear appetite remains satisfied. Might China change? It might if demand were stimulated,

which is why nuclear defenses are a bad idea, at least in Asia. In games of deterrence, defenses can be both stabilizing and destabilizing; deciphering when and how is one reason the United States turned its back on defenses, abandoning its civil defense program in favor of a strategy of mutually assured destruction.³¹ Today, the United States and China have tacitly entered into what can only be described as a period of mutual retaliation; nothing official has been declared, but both sides know that the stakes are too high for either to make a run militarily at the other.

Nuclear weapons socialize statesmen to the dangers of adventurism, which in turn conditions them to set up formal and informal sets of rules that constrain their behavior. No statesmen want to be part of a system that constrains them, but that is the kind of system that results among nuclear powers. Each state is conditioned by the capabilities of the other, and the relationship that emerges is one that is tempered by caution despite the rhetoric of its leaders.

During the Cuban missile crisis, President Kennedy and Premier Khrushchev sought solutions short of war, despite their sharp political differences.³² That the Soviets underestimated how the United States would react when confronted with the deployment of missiles off the coast of Florida is interesting but not as telling as how both leaders behaved when they realized what was at stake. Secretary of State Dean Rusk's comment that "We were eyeball to eyeball" is illustrative for two reasons. First, the two sides were staring into the face of grave danger. Second, there were no misperceptions. Both quickly recognized that the outcome of the crisis depended as much on the moves of one side as it did the other. War was the focal point; a threshold easily recognized, best not crossed, and worth avoiding.³³ This occurred despite the fact that the United States had overwhelming superiority in strategic and tactical nuclear forces and significant ability to blunt any Soviet retaliatory strike.³⁴ From that day forward, the superpowers understood that they could race to the brink but no further, lest they run the risk of nuclear war; a risk that neither side would take. Following the crisis, both sides took steps to reduce uncertainty and improve crisis stability.³⁵ What conclusions can be drawn? Small numbers of nuclear weapons produce dramatic effects. In times of crisis, they compel statesmen to act with restraint. In this sense, nuclear statesmen are risk averse, which also makes them vigilant.

Although it has been argued that such stable relations may have been unique to the bipolar relations between the United States and the Soviet

Union,³⁶ they seem to apply elsewhere. Prior to Pakistan acquiring a nuclear capability, it fought three bloody wars with India. Today, in the presence of nuclear forces, the sharp differences that separate India and Pakistan are not sufficient to drive either side to war.³⁷ While the two sides actively engage in a game of tit-for-tat, nuclear weapons have softened both states and steadied their relationship by reducing the likelihood of interstate war. Far from perfect, relations between India and Pakistan can be summarized as tense but stable.³⁸

Might this be the case within the Middle East? So it seems. Although the Arab states fought three wars to destroy Israel prior to widespread knowledge of its unacknowledged nuclear weapons capability, none have been fought since. Should Iran acquire a nuclear capability, the spread of nuclear weapons in the Middle East is all but certain. Although Israel's security will be challenged, given the potential for a mutual deterrent relationship to take hold thereby limiting its freedom of action, this constraint will also obtain throughout the region. Until it does, the challenge posed to Saudi Arabia in particular will be significant.³⁹ It is important to stress that the Iranian bomb will be a Shia bomb and the Sunni community will be hard pressed. Stabilizing the region until a Saudi weapons capability is ready will not be easy, and the options available to the United States are less than optimal. It could extend a security guarantee to the Saudis, but that would enlarge America's presence in the region, which would not sit well with extremists. Defensive systems could be deployed, but the down sides are similar to extending security guarantees. Islamic extremists would exploit their presence, holding them up as yet another example of the kingdom's dependency on the United States. A regional approach where the United States and its partners collectively provide for the defense of Saudi Arabia and the broader Sunni community might be effective, but the list of potential partners is short. Given all of this, the shrewdest thing to do might be nothing. As odd as it sounds, the United States might be better off by not acting and even allowing the Saudis to deploy a counterweapon should the Iranians decide to do so. In short, more might be better.⁴⁰

Toward A Minimal US Nuclear Deterrent

But perhaps not in arsenals that are already outsized. In the 1960s, the Kennedy administration recognized the need for a secure retaliatory capability and the desire of the services—particularly the Air Force—to purchase

capabilities that far outstripped that objective.⁴¹ It therefore sought to program capabilities that would be invulnerable to a counterforce strike and would be able to inflict unacceptable damage on the Soviet Union—but no more.⁴² Looking back, Secretary of Defense McNamara had this to say: “Our goal was to ensure that they, with their theoretical capacity to reach such a first-strike capability, would not outdistance us. But they could not read our intentions with any greater accuracy than we could read theirs. The result has been that we have both built up our forces to a point that far exceeds a credible second-strike capability against the forces we each started with. In doing so neither of us has reached a first-strike capability.”⁴³ In other words, both sides were, in fact, deterred fairly early on during the Cold War, even though that may or may not have been the intention, and the actual marginal utility of additional forces was quite small.

Therefore, as policy makers await the release of the administration’s nuclear posture review, the question is not whether the United States can reduce its number of nuclear weapons to zero. Instead, the question is: What size force is needed for deterrence? Those numbers are comparatively small. Today the United States can adopt a minimum deterrence strategy and draw down its nuclear arsenal to a relatively small number of survivable, reliable weapons dispersed among missile silos, submarines, and airplanes.

Strategic air commander Gen Thomas Power said in 1965 that “The optimum deterrent must lie somewhere between the illusory minimum and the impossible maximum.” To chart a course to the “illusory minimum,” a pragmatic approach must be found that comforts policy makers that have come to rely on the war-detering effects of nuclear weapons for six decades. Skeptical constituencies are more likely to embrace smaller numbers of nuclear weapons if the arsenal is reduced gradually. With this in mind, the International Commission on Nuclear Non-Proliferation and Disarmament proposed that the United States reduce to 500 nuclear weapons by 2025.⁴⁴ This represents a 90-percent reduction in the nuclear arsenal but offers more than enough deterrent capability while providing flexibility to pragmatically implement the force structure cuts.

In fact, the United States could address military utility concerns with only 311 nuclear weapons in its nuclear force structure while maintaining a stable deterrence. These 311 weapons should include missiles that are integral to a stable deterrence because they cannot be moved, are easily detected, and can hold enemy forces at bay with pinpoint accuracy. One hundred single-warhead ICBMs, such as the Minuteman III systems currently in

service, provide a disbursed, ready force that may be more politically palatable than more severe reductions. The sea leg of the triad can be constituted by 192 de-MIRVed Trident D-5 SLBMs on 12 *Ohio* class submarines, each capable of holding 24 missiles. This would allow two patrols of four boats each at any given time. These missiles are highly survivable as they can be moved, cannot be easily detected, and, with pinpoint accuracy, can hold hardened targets at risk if necessary. Furthermore, British and French nuclear capabilities remain available to assure European allies, if any perceive weakness based on this force reduction in the Atlantic. Finally, air-launched cruise missiles (ALCM) from 19 B-2s will continue to contribute standoff capability and flexibility to the triad. This is more than enough weapons to use aircraft for nuclear escalation control and political signaling while allowing all B-52Hs to convert and focus on a their conventional role. As with the SLBM force, ALCMs can be shuttled from wing to wing for operational security or intermixed with conventional munitions—a solution first proposed by Brodie.⁴⁵

In short, America's nuclear security can rest easily on a relatively small number of counterforce and countervalue weapons totaling just over 300. Moreover, it does not matter if Russia, who is America's biggest competitor in this arena, follows suit. The relative advantage the Russians might gain in theory does not exist in reality. Even if one were to assume the worst—a bolt from the blue that took out all of America's ICBMs—the Russians would leave their cities at risk and therefore remain deterred from undertaking the first move. Skeptics will rightfully attack this argument, so it is best to address a few concerns.

First, there will be those who insist that a minimum nuclear posture is of little value to the United States because it must maintain a nuclear arsenal large enough to cover all of its contingencies. In other words, while Pakistan has to contend with India, the United States has several potential contenders that, when combined, pose a large challenge. There is logic in that line of reasoning, but it ignores the vast conventional superiority of the United States. It is clear that in most circumstances conventional weapons will be preferred to nuclear ones and supplement the Global Strike mission. Indeed, Lieber and Press recognize this in their recent analysis of nuclear capabilities.⁴⁶ It is also undermined by the fact that the United States is deterred in most contingencies by China, which has a much smaller force structure. Presumably, if China can deter the United States, small numbers are effective. In fact, arguments for a large

force have no meaning unless they are tied to an exclusive counterforce strategy directed against Russia, which, when all is said and done, does not appear to be necessary. During the Cold War, the superpowers raced to increase numbers in an attempt to prevent one side from acquiring either a counterforce capability or a symbolic numerical advantage. All the while, both sides lost sight of the fact that it is the political value of nuclear weapons that matters most, not their military utility. New nuclear states seem satisfied with small numbers. One wonders why. It either has something to do with the number of threats that they face or with their appreciation of the political value of nuclear weapons. A definitive answer is out of reach, which is why debate on this issue is so important.

The second criticism has to do with the future of the triad, which was the fulcrum of deterrence throughout the Cold War. Some might argue that the triad was effective and its redundancy and flexibility shored up international stability and helped keep the Cold War cold. It is, however, important to recall that the Soviets had no such operational concept. They relied heavily, almost exclusively, on missiles and still managed to deter the United States. If one accepts the basic idea that it is the political value of nuclear weapons that matters, the method of delivery is immaterial.

Lastly, there is concern over organizational competency and professional development. How small can a force become before it no longer resembles a force at all? That is a difficult question to answer. In some instances, a smaller force can be extremely competent, and increasing its size could lead to its undoing. One thinks of the Navy SEALs. What makes the SEAL program so effective is that it is highly selective, well funded, specialized, and small. Might the same hold true for nuclear warriors? That is a question for others to answer. Sizing of the nuclear force should be based primarily on the requirements for a stable, reliable, nuclear deterrent, with support issues like industrial base support, crew force management, and training only weighing in as secondary considerations.

Conclusions


Deterrence evolved throughout the Cold War, moving from massive retaliation to the intricate targeting schemes of countervailing strategies. All the while the superpowers came to understand what Brodie aptly described as "strategy in the missile age." Despite the harsh rhetoric and big words from both sides, they came to appreciate what these weapons meant and behaved accordingly. While both vied for attention and aggressively

pursued international influence, neither side initiated or threatened to initiate a nuclear exchange. In short, nuclear learning occurred. Something similar is taking place in other parts of the world. China, India, Pakistan, North Korea, and presumably, Iran understand that a small number of nuclear weapons is all that is needed for deterrence to take hold. Others will learn too, which is why nuclear weapons ought to be the centerpiece of American strategy. That does not mean that they should be America's only concern, just the most important one.

Would the world be better off without nuclear weapons? Although it might be desirable to rid the world of nuclear weapons, it is not wise. "The web of social and political life is spun out of inclinations and incentives, deterrent threats and punishments." Take away the latter two and international society depends entirely on the former—a utopian thought impractical "this side of Eden."⁴⁷ Serious-minded men have wished it were not so. Gen Charles Horner, then head of US Space Command, explained in 1994, "I want to get rid of all [nuclear weapons]. I want to go to zero. I'll tell you why. . . . Think of the moral high-ground we secure by having none."⁴⁸ Two years later, addressing the National Press Club in December 1996, Gen Lee Butler, former commander of Strategic Air Command, wondered if "it is possible to forge a global consensus on the propositions that nuclear weapons have no definitive role; that the broader consequences of their employment transcend any asserted military utility."⁴⁹ In both instances, what was overlooked is the role that force plays in international life. In politics, force is said to be the *ultima ratio*. In international politics, it is the first and constant one.⁵⁰ Force casts a long shadow and serves as an incentive to temper statesmen, moderate demands, and settle disputes. That the use of nuclear weapons is to be avoided does not render them useless. Quite the opposite—nuclear weapons might be the most politically useful weapons a state can possess, which helps explain why they are spreading.

Nuclear weapons allow international life to go on in spite of their inherent dangers because leaders of nuclear states realize that that they are constrained despite their goals, desires, or rhetoric. The international system, with its uneven distribution of material capabilities throughout the world, regulates what states can and cannot do. Nuclear weapons add to this by making the likelihood of war among nuclear powers less, not more, likely.⁵¹ Shrewd statesmen recognize this as well as the realities of power in

international life. The fact is some states will pursue nuclear weapons; others will not.

In the final analysis, security is the problem; weapons one solution. The spread of nuclear weapons is derived from the relative insecurity of some states in the world. So long as war remains a finite possibility, we have to be concerned with outcomes, and while some would be bad, others would be worse. In the age of minimum deterrence, the world will have to stand for a few more nuclear states; the majority of them will not pursue nuclear weapons. Pursuit of such weapons is contingent upon security. If states can achieve it without them, they have no need for them, which is another way of saying a nuclear-free world hinges on a more secure one. That we are not there yet is reason enough to work to make it so. 

Notes

1. *Report of the Secretary of Defense Task Force on DoD Nuclear Weapons Management, Phase I: The Air Force's Nuclear Mission* (Washington, DC: Office of the Secretary of Defense, September 2008), 1.
2. Bernard Brodie, *The Absolute Weapon* (New York: Harcourt and Brace, 1946); *Strategy in the Missile Age* (Princeton: Princeton University Press, 1959); and *Escalation and the Nuclear Option* (Princeton: Princeton University Press, 1966). Also see Lawrence Freedman, *The Evolution of Nuclear Strategy* (New York: Palgrave, 2003); William Fox, *The Superpowers: The United States, Britain and the Soviet Union* (New York: Harcourt and Brace, 1954); Alexander George and Richard Smoke, *Deterrence in American Foreign Policy: Theory and Practice* (New York: Columbia University Press, 1974); Morton Halperin, *Limited War in the Nuclear Age* (New York: John Wiley and Sons, 1963); Herman Kahn, *On Thermonuclear War* (Princeton: Princeton University Press, 1960); George Kennan, *Russia, the Atom and the West* (New York: Harper and Brothers, 1958); Henry Kissinger, *Nuclear Weapons and Foreign Policy* (New York: Harper, 1957); Robert Osgood, *Limited War: the Challenge to American Strategy* (Chicago: Chicago University Press, 1957); Thomas Schelling, *The Strategy of Conflict* (Cambridge: Harvard University Press, 1960); and Schelling, *Arms and Influence* (New Haven: Yale University Press, 1966).
3. See, for example, William W. Kaufmann, "The Requirements of Deterrence," in *Military Policy and National Security*, ed. William W. Kaufmann (Port Washington, NY: Kennikat Press, 1956); George and Smoke, *Deterrence in American Foreign Policy*; and Paul Huth and Bruce Russett, "What Makes Deterrence Work? Cases from 1900 to 1980," *World Politics* 36, no. 4 (July 1984).
4. See Daryl G. Press, *Calculating Credibility: How Leaders Assess Military Threats* (Ithaca: Cornell University Press, 2005), for a discussion of the constituents of credibility.
5. *Report of the Secretary of Defense Task Force*, 1.
6. Freedman, *Evolution of Nuclear Strategy*, passim; Desmond Ball and Jeffrey Richelson, eds., *Strategic Nuclear Targeting* (Ithaca: Cornell University Press, 1986).
7. Lawrence Freedman, "Does Deterrence Have a Future?" *Arms Control Today* 30, no. 8 (October 2000).
8. Jonathan Schell, *The Seventh Decade: The Shape of Nuclear Danger* (New York: Metropolitan Books, 2007), 119.

9. *Deterrence Operations Joint Operating Concept*, version 2.0 (Washington, DC: DoD, December 2006), 11.
10. The classic statement of this critique is Stephen Maxwell, *Rationality in Deterrence*, Adelphi Paper 50 (London: International Institute for Strategic Studies, August 1968).
11. Robert Jervis, "Deterrence Theory Revisited," *World Politics* 31, no. 2 (January 1979): 299.
12. This is not a small point. In military circles, where one would expect to find some degree of emphasis placed upon rationality, the idea of the irrational actor has taken hold. This is especially true since 9/11. In discussing strategy with officers of all ranks, one is pressed with the retort "but you are assuming that the other guy is rational." No doubt suicide terrorists appear to be irrational at first, but even they are more than capable of reasoning. Waltz has made this point time and again. See Scott D. Sagan and Kenneth N. Waltz, *The Spread of Nuclear Weapons: A Debate* (New York: W. W. Norton and Co., 1995), 112–13, for an example.
13. For an analysis of the motives of adversaries in deterrence situations, see Gary Schaub Jr., "When is Deterrence Necessary? Gauging Adversary Intent," *Strategic Studies Quarterly* 3, no. 4 (Winter 2009): 49–74.
14. Robert A. Pape, *Dying to Win: The Strategic Logic of Suicide Terrorism* (New York: Random House, 2005).
15. Patrick Morgan, *Deterrence*, 2nd ed. (Beverly Hills: Sage Publications, 1983), 30.
16. John J. Mearsheimer, *Conventional Deterrence* (Ithaca: Cornell University Press, 1983).
17. A point first made by Brodie, "The Weapon," in *Absolute Weapon*, 25.
18. See Schelling, *Arms and Influence*, 133.
19. For example, fuel-air explosives or precision-guided conventional munitions capable of destroying hardened targets.
20. Nina Tannenwald, *The Nuclear Taboo: The United States and the Non-Use of Nuclear Weapons since 1945* (New York: Cambridge University Press, 2008).
21. Of course many have argued that if the aggressor also possesses nuclear weapons capable of striking the defender's territory with impunity, it would be irrational for the deterring state to carry out its retaliatory threat, particularly one directed against the adversary's population/industrial centers, as this would surely invite similar reprisals. In such a situation of mutual deterrence, it is argued, the deterrent threat would lack credibility. See, for example, Raymond Aron, *The Great Debate: Theories of Nuclear Strategy* (Garden City: Doubleday and Co., 1965), 128–30. This conundrum is generally solved, however, by claiming that the aggressor could not count upon the decision makers of the state it is attacking to be rational at a time of acute crisis; those decision makers could retaliate despite the probable consequences in a fit of anger or despair. As Glenn Snyder put it, "A thermonuclear attack based on an expectation that the victim would behave rationally would be a very dangerous gamble for the attacker." Glenn H. Snyder, *Deterrence and Defense: Toward a Theory of National Security* (Princeton: Princeton University Press, 1961), 64. There is a good deal of case study literature that suggests this is also the case in the event of a conventional attack. See Richard Ned Lebow, *Between Peace and War: The Nature of International Crisis* (Baltimore: Johns Hopkins University Press, 1981), for example.
22. This, of course, is direct deterrence. As discussed in many places, the protection of allies, forces overseas, or even noncontiguous possessions (such as Great Britain's crown colony, the Falkland Islands), are matters of extended deterrence, which is inherently more difficult. See Schelling, *Arms and Influence*, for an incisive discussion of this distinction.
23. For example, Stephen Van Evera discusses "states with developed nuclear arsenals [that] can annihilate each other even after absorbing an all-out attack" and provides France, Great Britain, and the Soviet Union as apparent examples of states with a mutually assured destruction capability. Stephen Van Evera, "Primed for Peace: Europe after the Cold War," *International Security* 15, no. 3 (Winter 1990/91): 13. But obviously, it would take a much larger nuclear capability to "assure" the destruction of Soviet society than that of France or Great Britain, given

the much greater size, population, and resources of the Soviet Union. And while it was easily assumed that the Soviet Union possessed the capability of absorbing an "all-out" counterforce attack by either (or both) France or Great Britain, the opposite was not so easily assumed. As David Yost wrote, "The targeting objectives of France's 'enlarged anti-cities strategy' . . . call for France to be able to strike at least a hundred 'vital centers' in the USSR in a second strike. . . . France's ability to do so, even in a first strike, is minimal today," that is in 1984 when France possessed 132 deliverable strategic nuclear warheads. David Yost, *France's Deterrent Posture and Security in Europe, Part I: Capabilities and Doctrine*, Adelphi Paper 194 (London: International Institute for Strategic Studies, Winter 1984/85), 28. As for the British, they recognized their inability to assure the destruction of Soviet society and based the "independent" version of their strategic doctrine, as well as designing the performance characteristics of their Polaris force, around the "Chevaline concept" of destroying only one very important target in the Soviet Union: Moscow. Lawrence Freedman, "British Nuclear Targeting," in *Strategic Nuclear Targeting*, 112–23.

Mearsheimer makes similar omissions concerning the capability necessary to successfully bolster deterrence with nuclear weapons. Only in the context of the Ukraine does he get more specific: "128 nuclear warheads . . . should be more than enough to wreak vast destruction on Russia. Even if only 10 percent or 13 of those warheads reached Russian cities, they would leave Russia devastated." John J. Mearsheimer, "The Case for a Ukrainian Nuclear Deterrent," *Foreign Affairs* 72, no. 3 (Summer 1993): 62. Mearsheimer's 13 deliverable warheads as an adequate deterrent closely resembles McGeorge Bundy's 10-warhead "disaster beyond history" standard that is generally used as an example of a minimum deterrent capability. Michael Salman, Kevin J. Sullivan, and Stephen Van Evera, "Analysis or Propaganda? Measuring American Strategic Nuclear Capability, 1969–88," in *Nuclear Arguments: Understanding the Strategic Nuclear Arms and Arms Control Debates*, eds. Lynn Eden and Steven E. Miller (Ithaca: Cornell University Press, 1989), 210.

24. The concept of existential deterrence is elaborated upon in McGeorge Bundy, *Danger and Survival: The Political History of the Nuclear Weapon* (New York: Random House, 1988); and Robert Jervis, *The Meaning of the Nuclear Revolution: Statecraft and the Prospect of Armageddon* (Ithaca: Cornell University Press, 1990).

25. The concept of proportional deterrence is elaborated upon in Pierre Gallois, *Balance of Terror: Strategy for the Missile Age* (Boston: Houghton Mifflin, 1961). Gallois' thinking is critiqued in Aron, *Great Debate*, 120–43.

26. As well as robust, survivable command and control capabilities.

27. Or, as Edward Kolodziej put it in terms of French strategic doctrine, "French military theorists . . . contended, however, that they could deter other states, even superpowers, because they possessed a destructive capability that would offset any gain envisioned by a potential aggressor. *The French force was alleged to be proportional in strategic capacity to France's political interests*. . . . France might be destroyed in the nuclear exchange, but the aggressor would presumably absorb more damage than could be reasonably offset by the anticipated benefits of his attack on France." Edward A. Kolodziej, *French International Policy under De Gaulle and Pompidou: The Politics of Grandeur* (Ithaca: Cornell University Press, 1974), 102 (emphasis added).

28. Yost, *France's Deterrent Posture*, 15, 18.

29. Of course the aggressor may value the defender's territory more or less given other factors, such as the symbolic value a victory over the defender would bestow, etc.

30. See William J. Perry and James A. Schlesinger, chairmen, *America's Strategic Posture: The Final Report of the Congressional Commission on the Strategic Posture of the United States* (Washington, DC: US Institute of Peace, 2009), 10–11.

31. A classic consideration of the problem is Donald G. Brennan, Leon W. Johnson, Jerome B. Weisner, and George S. McGovern, *Anti-Ballistic Missile: Yes or No?* (New York: Hill and Wang, 1968).

32. Graham Allison and Philip Zelikow, *Essence of Decision: Explaining the Cuban Missile Crisis*, 2nd ed. (New York: Longman, 1999).
33. For a discussion of strategy and focal points, see Thomas Schelling, *The Strategy of Conflict* (Cambridge: Harvard University Press, 1960).
34. Allison and Zelikow, *Essence of Decision*, 92–95.
35. Jack Mendelsohn, James P. Rubin, Matthew Bunn, Michèle Flournoy, and Jesse James, *Arms Control and National Security: An Introduction* (Washington, DC: Arms Control Association, 1989), 23–25; and John Lewis Gaddis, “The Long Peace Elements of Stability in the Post-war International System,” *International Security* 10, no. 4 (Spring 1986).
36. Lawrence Freedman, *Deterrence* (Cambridge: Polity, 2004), 75–83.
37. The Kargil conflict is the case often cited as the exception to the rule. The conflict began in May 1999 and ended in July of that year. During this time, Indian army units attacked Pakistani forces, and Indian jets bombed their bases high in the Himalayan Mountains. Although Indian forces carefully stayed on their side of the line of control in Kashmir, Indian prime minister Atal Bihari Vajpayee informed the US government that he might have to order an invasion into Pakistan. Eventually, President Clinton got involved and assured both sides that he would take an interest in resolving the dispute. Although at least 1,000 Indian and Pakistani soldiers were killed during this crisis, we do not agree with those who think of Kargil as a war. If one unquestionably accepts Singer and Small’s definition of war—see J. David Singer and Melvin Small, *The Wages of War 1816–1965: A Statistical Handbook* (New York: John Wiley and Sons, 1972), which defines war as a conflict that involves one member of the interstate system on each side in which the battle-connected deaths totaled at least 1,000—the Kargil crisis was a war. However, if one thinks of war in terms of the ordinary sense of the word, its conduct more closely resembled a nasty skirmish.
38. For interesting perspectives, see Sumat Ganguly, “Nuclear Stability in South Asia,” *International Security* 33, no. 2 (Fall 2008); and S. Paul Kapur, “Ten Years of Nuclear Instability in Nuclear South Asia,” *ibid.*
39. It is assumed that Israel has deterrent options readily available, should they choose to unveil them. The Sunnis have no such option.
40. See Kenneth Waltz and Scott Sagan, *The Spread of Nuclear Weapons: A Debate Renewed* (New York: W. W. Norton and Co., 2003).
41. David Alan Rosenberg, “The Origins of Overkill: Nuclear Weapons and American Strategy, 1945–1960,” *International Security* 7, no. 4 (Spring 1983).
42. Alian Enthoven and K. Wayne Smith, *How Much Is Enough? Shaping the Defense Program, 1961–1969* (New York: Harper and Row, 1971).
43. *The Dynamics of Nuclear Strategy*, Department of State Bulletin LVII, 9 October 1967.
44. Gareth Evans and Yoriko Kawaguchi, *Eliminating Nuclear Threats: A Practical Guide for Global Policymakers—Report of the International Commission on Nuclear Non-Proliferation and Disarmament* (Canberra: Paragon, 2009).
45. Brodie, “Weapon,” 37.
46. Keir A. Lieber and Daryl G. Press, “The Nukes We Need,” *Foreign Affairs* 88, no. 6 (November/December 2009): 48.
47. Kenneth Waltz, *Theory of International Politics* (Boston: McGraw Hill, 1979), 186.
48. Gen Charles Horner (press briefing, 15 July 1994).
49. Gen Lee Butler (speech, National Press Club, 4 December 1996).
50. Waltz, *Theory of International Politics*, 113.
51. This is largely a structural claim. See Waltz, *Theory of International Politics*, for the definitive account.